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► To cite this version:

Laura Centemeri. Environmental Damage as Negative Externality: Uncertainty, Moral Complexity and the Limits of the Market. E-Cadernos CES, 2009, pp.22-41. 10.4000/eces.266 . hal-01053062

HAL Id: hal-01053062

<https://hal.science/hal-01053062>

Submitted on 29 Jul 2014

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ENVIRONMENTAL DAMAGE AS NEGATIVE EXTERNALITY: UNCERTAINTY, MORAL COMPLEXITY AND THE LIMITS OF THE MARKET

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Abstract: The economic concept of negative externalities is the dominant frame in environmental policies. Revisiting environmental damage with a sociological approach, I show how the process of externalities definition and internalisation is a political process in which a public is constituted and common problems are collectively defined and addressed. In particular, I highlight the presence in this process of two kinds of uncertainty which have to be dealt with: epistemic uncertainty and moral uncertainty. Keeping these two forms of uncertainty analytically separated is useful in order to understand the limits of the market as a way to internalize environmental externalities and to analyse in their specificities the different types of translation, mediation and composition which are needed in order to create the conditions for a truly inclusive and democratic public deliberation on environmental damage and its reparation.

Key Words: Externalities, uncertainty, Michel Callon, William K. Kapp, Laurent Thévenot

Introduction

Terms such as “environmental crisis”, “environmental issue” or simply “environment” have gained currency for indicating a collection of problems, deprived of any stable and univocal criterion of inclusion: climate change, pollution, natural and technological risks, toxic waste, species extinction, exhaustion of natural resources. In order to address these different manifestations of the environment as a public problem, neoclassical economics resorts to just one category of analysis: negative externalities.

This capacity to reduce a wide variety of problems to their lowest common denominator is a point of strength of neoclassical economics: it goes with the high generalizability of its tools. Nonetheless, this is also a point of weakness. In fact, the lowest common denominator guaranteeing generalizability is defined by assuming that environmental problems emerge because of the absence of markets for environmental goods.

Accordingly, the solutions envisioned are either the introduction of some mechanism meant to amend this failure of the market or the attribution of property rights over environmental goods. This approach prevents neoclassical economics from taking into account the relevance of two distinctive aspects of environmental damage that challenge the appropriateness of exclusively relying on economic tools when dealing with environmental problems.

First, we have to consider the epistemic uncertainty surrounding environmental processes which account for environmental degradation. We cannot always identify the specific causes of incidences of environmental damage, because we are confronted with complex systems which involve complex social and ecological interdependencies. Second, we must acknowledge that there are different ways to value the environment, some of them quantifiable, others not so.

In both cases, the issue of incommensurability, that is, the absence of a common unit of measurement across different phenomena, emerges as central, thus putting into question the capacity of economic tools alone to address environmental concerns: “from an ecological point of view, the economy lacks a common standard of measurement, because we do not know how to give present values to future, uncertain and irreversible contingencies” (Martinez-Alier, 1995: 76).

The aim of this paper is to bring into the debate on environmental damage¹ an analysis of both epistemic uncertainty and moral complexity and thereby to emphasize the place of incommensurability in public decisions concerned with the environment. The concept of negative externalities can be a useful heuristic in discussing environmental damage, as long as “instead of focusing on ‘missing markets’ as causes of allocative disgraces, we focus on the creative power that missing markets have” (Martinez-Alier *et al.*, 1998: 283).

The paper is organised as follows: in the first paragraph I present the neoclassical approach to environmental damage. In the second, I present a critical standpoint, internal to the economic debate, addressing the limits of this conceptual frame. I show how the issues raised in this debate open a window of opportunity for a cross-fertilisation with a sociological perspective. Developing this line of reasoning, I discuss externality situations as “problematic situations” (Dewey, 1938) marked by epistemic uncertainty (§3) and moral uncertainty (§4). In particular, I address the question of how these two kinds of uncertainty can be reduced so as to make collective decisions on environmental problems possible, while still guaranteeing their inclusiveness, in terms of acknowledging plural ways to know and value the environment.

¹ The notion of environmental damage I will discuss throughout the paper is that of the environmental damage understood or defined in terms of negative externality.

The Neoclassical Approach to Environmental Damage

In the neoclassical economic frame, goods exchanged in the market are the only way through which the materiality of the world is taken into account. On the one hand, consumption is considered as a process of destruction, so that no material support is left after consumption (that is: no waste exists). On the other hand, the so called “free goods” (air, water) are non-market goods and thus basically not relevant to the economic analysis. In this sense, we can say that the sphere of “the economic” has been built as independent and separate not only from the sphere of “the political” but as also from the environment.² As a consequence, neoclassical economic theory is intrinsically indifferent to the processes assuring the reproduction of the environmental and material conditions guaranteeing the existence of human beings (Luzzati, 2005).

Starting in the 1960s, in a climate of growing political and social awareness of the environmental crisis (Carson, 1962; Commoner, 1971), economics has been abruptly confronted with the necessity of taking the environment into account, first of all through the issue of the exhaustion of natural resources (Club of Rome, 1972) and then through the issue of the environmental damage caused by industrial pollution (Boulding, 1966; Krutilla, 1967).

It is on these premises that a specific branch of economics addressing environmental problems, known as “environmental economics”, has developed. The key analytical concept around which this field of investigation is structured is that of *externalities*. The concept of externality is not specific to environmental issues: it is used to define situations where the activities of one (or more than one) economic agent(s) have consequences on the economic well-being of other agents, without any kind of exchange or transaction occurring between them.³ When these indirect consequences increase well-being, externalities are qualified as “positive”; otherwise, they are qualified as “negative”. Pollution is the classic example of a negative externality, while public health policies produce positive externalities. Since there is no reward (or gain) for those producing positive external effects or sanctions for those causing negative external effects, externalities cause the market to fail to achieve an efficient allocation of resources. In fact, when externalities are present, private and social costs diverge, so that profit maximizing decisions are socially inefficient because prices do not carry all the relevant information. We speak then of negative externalities if the social cost of an activity is higher than its private cost.

² On the construction of the “economic” as a separate sphere see Dumont (1977), Hirschman (1977) and, in particular, Polanyi (1944) whose analysis stresses the negative consequences on the environmental equilibria of this fictional separation of the economic sphere.

³ For a detailed account of the history of the concept of externality see Papandreou (1994).

Let us take the example of a factory that produces the good X, maximizing its profit. In order to decide the optimum level of production, the cost of production has to be taken into account in the economic calculus. If the factory can dispose freely of its waste in the environment, without paying for it, the cost of pollution is not taken into account when deciding the optimum level of production. As a result, the volume of production maximizing the producer's private profit is higher than that guaranteeing the social optimum.

The solution proposed for this market failure is that of internalizing externalities by integrating them into the economic calculus of maximizing actors. Different instruments have been proposed in order to achieve this goal: giving a price to free environmental resources, taxing the polluter, introducing regulation, attributing property rights over environmental resources. These instruments are applied in order to correct price signals, so that individual optimizing decisions are aligned with the socially optimum resources allocation. This frame of analysis is the major contribution of economic theory to the field of environmental policies.

In the solutions neoclassical economics provides for the internalization of environmental externalities the key issue is determining the social optimum. In order to determine the social optimum, it is necessary to set some optimum level of pollution, since a level of zero pollution is considered unrealistic. This optimum level of pollution is set according to a comparison between the costs and benefits of pollution and de-pollution. The problem is represented as a problem of allocation of scarce resources. To summarize, pollution causes damage but de-pollution implies costs. Resources are scarce, so those resources to be invested in the protection or restoration of the environment cannot be used for the production of other socially valuable goods. The internalization of environmental negative externalities results in solving a problem of cost-benefit analysis applied to pollution and de-pollution.

This approach oversimplifies the nature of environmental problems and raises a great many critiques. First of all, the redistributive effects of environmental policies designed according to this model are not taken into account. The unequal allotting of costs and benefits among different individuals, social categories, present and future generations, geographical areas is not considered in the decision process (Vallée, 2002: 80). Important issues of equity linked to the environment go completely unaddressed in this frame. The only social goal taken into account in the neoclassical approach is that of efficiency in allocating scarce resources. But more is at stake when deciding about the environment, *i.e.* other relevant social goals such as, for example, equity (Godard, 2003).

Second, the economic marginal analysis cannot usefully apply to systems as complex as those found in nature. A marginal increment in pollution does not necessarily result in a

correspondingly marginal injury to the environment. There may be a tipping point beyond which the environment can absorb no more pollution and irreversible damage is thus inflicted on ecological systems (Sagoff, 1981: 1393). This brings to the fore the difficulty of valuating environmental damage through a cost-benefit approach. The cost-benefit method implies that we have full information on the consequences of an action, as well as a clear definition of cause-effect mechanisms, which is rarely the case when the environment is involved. Moreover, expressing irreversible losses in monetary terms is quite controversial. Equally controversial is the valuation of environmental benefits.

The valuation of environmental costs and benefits has become one of the main topics of research in environmental economics. Economists define the social value of a good according to the intensity of consumers' preference as expressed by people willingness to pay. When markets are absent, as is the case of environmental goods, preferences cannot be observed through consumers' actual choices. Economists must then rely on methods such as contingent valuation: individuals are directly asked through a survey how much they would be willing to pay for a good or accept as compensation for its loss in a hypothetical market.

These methods give rise to internal difficulties which lead to sophisticated attempts to solve them.⁴ But the emphasis on the need for monetary valuation in environmental policies is based on a set of misleading assumptions. First, behind the importance given to the valuation of environmental goods there is the idea that well-being consists of the satisfaction of preferences, so that we can ascertain the total well-being produced by a policy option by measuring the strength of preference of affected parties for or against its realization by their willingness to pay for measures. But:

It is implausible to assume that the satisfaction of preferences as such is either constitutive of welfare or leads to an increase of welfare. (...) I might prefer to smoke in the absence of knowledge of its health effects. Had I been fully informed my preferences would have been otherwise, and the satisfaction of raw preferences might lead to a decrease, not an increase in well-being. (...) What matters in the valuations is not the preference, but the quality of reasons and information (O'Neill, 1997: 517).

The neoclassical approach to environmental problems, on the contrary, neglects the influence of information and of debating reasons on individual preference formulation. The intensity of preferences is considered as the only way people have of expressing what they want.

⁴ See the references listed in O'Neill (1997: 546).

Second, valuing environmental goods is considered necessary in order to decide among conflicting objectives. The claim here is that given the existence of competing objectives in environmental policies, resolution requires some common measure of comparison. For example, when managing a forest, conflicts can arise between objectives of biodiversity preservation, of wood production, of recognition of cultural values attached to the forest. In the neoclassical approach the way to solve the conflict is through comparing costs and benefits of different forest management measures. This implies putting a price not only on biodiversity but also on people's attachment to forests as part of their identity. This implies not considering that in real life not all objectives are tradeable and that social relations exist (including relations to the environment) that are constituted by refusing to put a price on them (Espeland and Stevens, 1998).

As I will discuss in greater depth in the next paragraph, the neoclassical approach to environmental damage has been criticised as reductionist within the field of economic theory, because of its denial of the specific moral and political problems raised by environmental issues. A broader understanding of the rationality of public decision processes, not limited to market rationality, is claimed as necessary when the environment is involved.

A Critical Economic Perspective on Environmental Damage

The neoclassical economic approach to environmental damage has been radically critiqued by economists, usually with an institutionalist background, interested in developing alternative interpretations of economic action and in critiquing the paradigm of *homo oeconomicus*. The theoretical challenge environmental damage represents for neoclassical economics has been openly assumed and investigated (see: Martinez-Alier, 1987).

Two main charges are levelled at the way neoclassical economics deals with environmental issues. First, the relations existing between human beings and their environment are complex, and this complexity cannot be grasped through economic tools alone. These tools can deal only with a part of the relevant interactions accounting for environmental degradation, that is, those interactions that can fit a market frame. This implies that collective decisions on environmental issues call for a multidisciplinary approach. Second, allocative efficiency cannot be considered as the only way to define the collective interest when the environment is involved. As pointed out by William K. Kapp, considered one of the conceptual founders of the heterodox approach of ecological economics, environmental externalities are not a case of market failure but a failure of the

market as a cognitive, moral and material frame to deal with the environment (Kapp, 1970).

The critical approach to environmental damage developed by Kapp is of particular interest, because it offers a basis for a more “realistic” definition of what environmental damage is, why it is produced, how it can be internalized (Swaney and Evers, 1989; Luzzati, 2005; Franzini, 2006). In fact, Kapp adopts an approach which considers the economy as an open system. As a result, three issues are made visible that open an opportunity for cross-fertilisations with a sociological approach.

First of all, Kapp identifies the origin of externalities in the “fiction” of the “economic sphere” as a closed sphere. This fiction rests upon market value considered as the only possible definition of value. If we consider the economy as an open system, then alternative definitions of what constitutes value have to be taken into account. “Social use value” is, for example, a definition of the value Kapp suggests and which rests upon issues of preservation of environmental equilibriums and satisfaction of human beings’ fundamental needs. Since the market cannot take into account these plural ways to define what constitutes value, we need other forms of evaluation and of social and political determinations of the social use value, involving different forms of knowledge about the environment and the interactions human beings have with it. The plurality of ways to define what constitutes value goes in tandem with different desirable collective goals to be pursued: allocative efficiency is just one of them. That is why “deliberative, *i.e.*, political decisions” are needed in order to evaluate “environmental requirements in comparison to other public goals to be pursued” (Kapp, 1963: 317).

Second, Kapp associates the existence of externalities to the question of legitimacy. In his view, externalities are in fact produced by a form of “cost shifting” (from economic activities of production to the environment) which is considered legitimate in our societies. In this sense, the definition of social and environmental rights, and, more generally, forms of political critique, in modifying or challenging the terms of legitimacy, can reduce the social acceptability of the cost shifting, helping to develop forms of internalization.

Third, the question of legitimacy is connected by the author to the question of “conventional measurements of performance” and of indicators used as a basis for public decisions impacting the environment (Kapp, 1950: vii). Kapp stresses the epistemic complexity characterizing environmental damage. This implies the need to take into account a wide variety of indicators in order to decide on environmental issues. Besides economic indicators, social and natural indicators have to be considered as a knowledge base for the decision. Still, no easy synthesis is possible, because the different kinds of social and environmental cost are incommensurable. Economic tools based on monetary equivalences cannot offer a synthesis of the actual costs-benefits trade-off really at stake.

The complexity of the social and environmental implications of decisions impacting the environment can thus not be expressed through “synthetic measures”, which usually hide forms of power abuse (*apud* Luzzati, 2005: 11).

To summarize, Kapp emphasizes the political content of the work of what neoclassical economics calls “internalization”; at the same time, Kapp is critical of the entire idea of externality, since the external-internal divide is defined by neoclassical economics considering the market as the “internal” to which all kinds of relation between human beings and the environment should adapt. On the contrary, Kapp’s analysis points to the dimensions of uncertainty and plurality brought to the fore by environmental damage: uncertainty (epistemic), because of the wide variety of natural and social processes that have to be explored, researched and taken into account as relevant in the public decision concerning environmental issues; plurality in the definition of what constitutes the value of the environment. These different forms of valuing the environment rest upon the definition of a plurality of valuable goals to be pursued collectively.

In the next paragraph I will address the critical points raised by Kapp, re-interpreting them in the frame of a sociological approach to environmental damage. Understanding the processes of social definition of externalities is relevant in order to comprehend not only how environmental damage is defined in our societies but also what is at stake when we talk about internalization.

Environmental Externalities “Revisited” by Sociology: Dealing With Epistemic Uncertainty

Using the category of externality to deal with environmental damage can produce a distorted vision of the problems at stake, as Kapp’s critical approach clearly shows. At the same time, analyzing environmental damage as negative externalities to be internalized can be a good heuristic. However, using the concept of externality as a heuristic requires a deeper understanding of the external-internal divide which defines the very essence of externalities.

I propose to explore this external-internal divide by means of a pragmatic sociological approach, according to which the dynamic from the external to the internal can be analysed as a process of construction of a “world in common”.⁵ This construction implies

⁵ The pragmatic approach I adopt in my analysis is that associated with the work of Michel Callon and Bruno Latour and of Luc Boltanski and Laurent Thévenot over the past decade (Callon and Latour, 1981; Thévenot, 1990; Boltanski and Thévenot, 2006). This approach is also referred to as the “new French pragmatic sociology” (Silber, 2003) and it is linked to a wider “pragmatic turn” of the French social sciences occurring in the 1990s (Dosse, 1999). For a synthetic presentation of this approach see Bénatouïl (1999) and Breviglieri and Stavo-Debaugé (1999). It is important to specify that French pragmatic sociology was not directly influenced by American pragmatism, even if later connections have been drawn in particular with John

the definition of more or less conventional resources (objects, laws, rules, indicators, routines, arrangements) meant to help agents in building a community of perspectives on the way to coordinating with other agents and the environment (Dodier, 1993). This approach recognizes a plurality of ways in which agents are related to the environment. These different relations to the environment are actively formatted by agents, in order to guarantee the achievement of valuable collective goals.

A good starting point for discussing externalities from a sociological perspective is Kapp's argument linking externalities to the construction of the economic sphere as a "closed sphere", an argument which has a lot in common with Karl Polanyi's analysis of the disembeddedness of the market economy (Ophuls, 1977).

In *The Great Transformation* (1944), Polanyi advances an interesting analysis according to which the logics of "economic liberalism", imposing the separation of the economic sphere, find themselves confronted with a movement of "social protection" (or conservation) which becomes manifest through the organised action of those people more directly affected by the negative consequences of market activities. What Polanyi offers us is, in fact, a sort of theory of market externalities internalization based on the principle of the "double movement": the legitimacy of measures adopted according to the market model is challenged by the organized actions of those people suffering negative consequences. Through their struggle, the market can be – so to say – "re-embedded".

With a similar approach but trying to go beyond the automatism of Polanyi's analysis – in which the "double movement" is considered as an "unconscious" resistance of the social – Michel Callon has proposed that the concept of externalities to be revisited in terms of "overflows" (Callon, 1998a, 1998b; Callon *et al.*, 2001). We can summarize his analysis as follows: negative externalities are non-calculated market costs which affect agents who react by mobilizing publicly so as to produce the conditions for the recognition of the damage suffered. Thus, the market undergoes a re-organization – that is, an internalisation is produced. In Callon's view this re-organization produces a de-naturalization and re-politicization of the market.

This approach to externalities considers the process of internalization as a process of formation of a "public". With a similar perspective to that developed by Dewey (1927, 1938), those people affected by negative consequences of a "problematic situation" constitute themselves as a "public", that is, a collective actor who, through a process of inquiry, explores the problems experienced. Callon stresses the political relevance of externalities as political situations where problems are defined and explored and a community is called to deliberate on what has to be considered as a public problem and how to deal with it.

Dewey's work (Karsenti and Quéré, 2004).

On the other hand, from Callon's perspective, externality is a useful concept because it reveals the "social construction of the market" (Callon, 1998b: 244): externalities show that the market is a socio-technical construction. In fact, in order for the market to guarantee coordination, a specific frame of the situation is necessary. This means that the relations existing between human beings and the environment have to be put into an appropriate form for the market to work: this form is the one allowing calculativeness. As Callon argues: "calculating (...) is a complex collective practice" (Callon, 1998a: 4), which means that reality has to be equipped and prepared in the right shape so as to make calculation (and the market) work.

In this respect, externalities highlight both the socio-technical construction of the market as a specific framing of coordination (among agents and with the environment) and the unavoidable existence of "overflows". Callon's analysis focuses on the socio-political processes of overflow identification and framing, that is, the socio-technical processes by means of which what economists call externalities are socially defined and dealt with. This issue is not included in the neoclassical economic analysis of externalities, which assumes the self-evidence of externalities, ignoring the work of their formatting. On the contrary, Callon's approach develops Kapp's suggestion that dealing with externalities means dealing with how conventional measurements of performance and indicators for public decisions are defined.

In Callon's analysis of overflow identification and framing, two processes are entwined. First, the production of knowledge about overflows, meant to help put them into a format which enables public decision. Second, the political mobilization of those people who are affected by the overflowing. Taking as examples environmental risk cases (OGM, nuclear radiation, chemical pollution), Callon emphasizes the scant self-evidence of environmental damage and the work of inquiry necessary to produce proof and evidence of the negative effects affecting people and their environment. In this sense, what economists define and study as negative externalities are already the output of a socio-technical process which gives shape to an occurrence of damage recognised as such in the public space.

The identification and framing of overflows are usually the object of public controversies. These controversies concern categories, tools and indicators which are used to define cause-effect relations, to measure damage, to identify victims. This work of framing takes place in "hybrid forums" (Callon, 1998b), that is, spaces of deliberation where experts, public decision-makers and citizens debate damage definition. These controversies indicate the absence of a reliable knowledge base to identify and deal with externalities.

Experts (and expert knowledge) play an important role in providing legitimate and public categories to frame overflows. At the same time, Callon stresses the fact that framing environmental damage challenges expert knowledge. Environmental damage is the product of a complex web of interdependencies that cannot be grasped through the standardized and formal categories and tools of laboratory sciences. Different, “lay” forms of knowledge of the environment are crucial in order to define the type and extent of environmental damage, and how to intervene in order to internalize it.

Callon’s analysis, then, is centred on the aspect of epistemic uncertainty surrounding environmental damage. The definition of environmental damage is analysed by Callon as a socio-technical process of collective reduction-containment of epistemic uncertainty through the definition of a knowledge base which includes a variety of forms of knowledge: the idea of a “hybrid forum” as the place where controversies are settled points in this direction.

As I have already pointed out, this reduction-containment is particularly complex to achieve when the environment is involved, because environmental damage can be defined in relation to different specifications of the relevant human-environment interdependencies to be taken into account, for example from those more grounded locally to those which are defined more globally (Godard, 2000). These different interdependencies are linked to different “formats of information” (Thévenot, 1997) which translate them into actual knowledge. We are then confronted with different kinds of knowledge: general scientific knowledge detached from the specific case and intended for broad circulation; local knowledge, embedded in familiar surroundings and shared through proximity relations.

As remarked by Wynne (1996: 59), in this dichotomy of local-general knowledge, “social assumptions and models”, “social prescriptions”, as well as “tacit forms of social order, relationships and identities”, are at stake. There is a dimension of power involved in the definition of the legitimate knowledge for public decision. This is the aspect Kapp refers to as a struggle for legitimacy, which is, in turn, linked to the issue of “different constructions of what constitutes value” confronting each other in the arenas where the framing of overflows takes place. This aspect is marginally addressed in Callon’s analysis, when he assumes that victims of environmental damage mobilize in hybrid flora so as to adjust and correct the market frame in order to include demands for “more justice” (Callon *et al.*, 2001).

The question of the plurality of definitions of the desirable collective goals to be pursued needs to be addressed in greater depth, since the very same definition of externalities as “negative” implies a common moral view that cannot be taken for granted

but ought to be considered as a crucial part of the socio-technical construction of externalities.

To summarize, what Callon points to as a distinctive aspect of environmental damage is the high level of epistemic uncertainty to be dealt with. In particular, the main issue is the definition of the relevant knowledge to assess environmental problems and to decide collectively as to their treatment. As a result, Callon is particularly interested in exploring the different ways in which local knowledge can succeed in being recognised as a form of public knowledge, through an articulation with scientific knowledge. At the same time, he endeavours to define procedures which can help the dialogue between experts and lay people in hybrid flora, so as to foster the production of inclusive forms of public knowledge and decision on environmental damage.

However, Callon's analysis is weak in addressing two relevant questions, entangled in the process of negative externality definition and internalisation: first of all, the place of the market (and calculativeness) as the frame to regulate overflows and the relation of the market with other legitimate frames of regulation and evaluation; second, the moral dimension involved in the definition of "negative externalities", since the very same definition of "negative" implies a judgement and an evaluation about what can be considered as good.

As discussed in the next paragraph, the difficulties in settling controversies concerning environmental externalities are not only linked to the epistemic complexity characterizing environmental problems but also to the dimension of moral complexity involved in the process of defining environmental damage.

Environmental Externalities "Revisited" by Sociology: Dealing With Moral Complexity

The concept of "critical uncertainty" developed by Boltanski and Thévenot in *On Justification* (2006; Thévenot, 1989) can be particularly useful in exploring how epistemic uncertainty is linked to forms of disagreement on the moral criteria relevant in defining and settling problematic situations.

The justification approach originates in the empirical study of disputes involving people and things, when people have recourse to the most legitimate forms of evaluation to frame their arguments in public and put them to a test. These forms of evaluation are called by the authors "orders of worth". Each order of worth places value on a specific mode of relation with our social and natural environment.

According to Boltanski and Thévenot's justification approach, "there is not just one way of making value" but "multiple principles of evaluation": "orders of worth are not

values counterposed to value but are constitutive of value. Orders of worth are the very fabric of calculation, of rationality, of value” (Stark, 2009: 22). From this perspective, market is indeed one of the organizing principles of our society but, in addition to a market rationality, modern society also has an industrial or technological rationality, another organized around a civic logic, and others arrayed according to principles of loyalty, inspiration and renown.

Orders of worth are not specific to distinct spheres of activity. The market order is not the order of worth of the economic sphere. Each of the orders of worth can be salient in a given situation. This implies that markets in real life never work according to what the market rationality model would lead us to expect. They are always characterized by the co-presence of different rationalities at work.

In this frame, moral uncertainty is, then, linked to the existence in our societies of different legitimate ways to define what constitutes value, that is, in the specific case of environmental issues, of qualifying the environment as a “good”. This plurality implies that the environment can be qualified as patrimonial heritage, linked to the history and traditional way of life of a community; as a landscape, valuable according to an aesthetic criterion; as endowed with symbolic value; as a pool of resources with a price defined through the market; as a dimension of the human condition to which rights are linked; as a space to be planned according to principles of efficient organisation of different functions. A specific environment can be valued according to each of these moral criteria, defining what constitutes its value (Thévenot *et al.*, 2000; Godard, 2000, 2003). Symmetrically, the definition of what constitutes an occurrence of environmental damage is thereby non-univocal.

Assuming this condition of critical uncertainty linked to the existence of different ways to define what constitutes value implies taking seriously into account the dimension of incommensurability characterizing problematic situations as morally critical situations: “As coherent principles of evaluation, each of the orders of worth has distinctive and incommensurable principles of equivalence. Each defines the good, the just, and the fair – but according to different criteria of judgement (Stark, 2009: 23).

As a result, if we consider externalities as morally critical situations, internalisation implies not just a re-framing of the market, through finding a way to translate it into a calculative format (basically, a way to commensurate) different kinds of relations to others and to the environment; internalisation is first of all a process of building “compromises”⁶ between different orders of worth coexisting in the same situation. This construction of

⁶ In the justification approach, “compromise” is not a temporary agreement between individual interests: it is a true “composition” of different justification criteria which gives birth to a new, “composed” normative criterion (Boltanski and Thévenot, 2006).

compromises takes into account and deals with incommensurability without setting commensurability as a goal, at the same time drawing up a shared frame in which collective decisions can be made. The internal-external divide is, then, re-defined in this perspective in terms of the presence/absence of collective frames of regulation of the relations between human beings and their environment, guaranteeing what is recognized as a valuable collective goal. These frames of regulation can include elements of calculativeness and market coordination, but in a compromise with other orders of worth. They are crafted through public discussion and deliberation concerning reasons and justifications for public decision.

Epistemic uncertainty and moral uncertainty are two dimensions of uncertainty we should keep analytically separated, but they are entangled. In fact epistemic uncertainty (meaning the uncertainty concerning the relevant knowledge which will allow a decision to be made on a problematic situation) is linked to moral uncertainty. If agreement on the frame for moral judgement concerning what constitutes value is missing, then controversies on what is the relevant knowledge (and the relevant agents) for the collective decision are impossible to settle. At the same time, once the moral frame is defined, the high level of epistemic uncertainty characterizing environmental damage, and which can cause the failure of institutional arrangements, opens up the possibility for a critique of these same arrangements. The critique can point to the need to improve the performance of these arrangements (the moral assumptions incorporated in the arrangements are not contested) or to define a new type of arrangement (the moral assumptions incorporated into the arrangements are contested).

The orders of worth we have discussed until now define a “horizontal pluralism” concerning public and legitimate repertoires of evaluation and judgement. Starting from the work on justification, Thévenot has developed the approach of “regimes of engagement” which emphasizes a different type of moral complexity, of particular interest when dealing with environmental issues: a “vertical pluralism” (Thévenot, 2006). This second type of pluralism highlights the relevance in our societies, besides the plurality of legitimate orders of worth guiding justifiable action, of more personalised and localised moral criteria defined as such by agents in their engagement of proximity and familiarity with a specific environment (Thévenot, 1990, 2001, 2007). In particular, the moral criteria guiding the familiar engagement of a person with his/her environment are defined as such in the experience of living in - and being familiar with - an environment, and they can be shared only if the very same experience of attachment to the environment is shared. Being based on familiarity and proximity, these moral criteria cannot be applied when problems are discussed in terms of public problems potentially affecting everybody. When public problems are at stake, “generality” (Boltanski and Thévenot, 2006) is a main feature

defining the legitimacy of arguments. To make proximity goods acknowledgeable to others in discussions of public problems, it is necessary to find a way to compose them with public and legitimate criteria of judgement and evaluation.

As argued by Stavo-Debaugé and Trom (2004) in discussing Dewey's theory of the public, the "problematic situation" is always at first experienced as a "trouble" altering proximity attachments. Only in a second moment do troubles undergo a redefinition in order to be expressed and reconstructed, during the inquiry process, in a format that allows for public judgement and evaluation. Legitimate common goods which are under threat in the specific situation are articulated with proximity concerns.⁷

When dealing with environmental damage, the ways to define value based on proximity are crucial, since the environment, before being publicly valuable in terms of patrimonial heritage, resources and rights, is what materially surrounds the agent as a space of proximity and familiarity, where attachments guaranteeing the consistency of the person are anchored (Breviglieri, 2002). When dealing with environmental issues, it is particularly important to take into account and explore this dimension of proximity in which the trouble generated by the problematic situation is first experienced. In fact, sometimes environmental disturbances affect the person so acutely that "voice" (Hirschman, 1970) is highly demanding, and sometimes impossible. Hybrid flora requires such an active stance without considering the resources (even those of an emotional nature) and capabilities (of argumentation) agents need to have. Moreover, sometimes environmental troubles cannot find an easy way to access the public space in terms of public issues: forms of "vicious extensions" of these moral criteria of proximity -in terms, for example, of communitaristic claims- can emerge (Centemeri, 2006: ch.4).

As suggested by Callon, the definition of environmental externalities and their internalization should take place in regulated spaces of deliberation: they are intended as public arenas in which "translations" occur, that is, processes of definition of chains of equivalence (Callon and Latour, 1981). At the same time, they are spaces of epistemic and moral complexity in which issues of incommensurability have to be dealt with. This requires in particular paying attention to the conditions implicitly or explicitly defined for the inclusion in these deliberative arenas. Are these arenas really designed and equipped to make possible the inclusion of experiences and voices relating concerns and troubles which are not straightaway in the appropriate format for entering the public debate? Do deliberation processes also concern the very same definition of what has to be considered as "negative" and as damage, not only taking into account the plurality of legitimate orders

⁷ In the case study they discuss of the citizen mobilisation for the preservation of the Vieux Lyon quarter, the authors show how, through reference to "patrimonial heritage", a group of militants succeeds in composing the local concerns of inhabitants threatened by an urban renovation plan involving a radical transformation of their familiar space, with a collective interest in the preservation of an artistic heritage site of world interest.

of worth but also the moral dimension involved in engagements of proximity affected by environmental damage?

Mediations (and mediators) are, then, needed to deal with incommensurability and the impossibility of a generalized trade-off. This implies work designed to make publicly visible several legitimate moral perspectives without aiming at their reduction to a common denominator, but helping making moral assumptions explicit and part of the deliberative process. At the same time, compositions are needed to bring the relevance of proximity goods into the public discussion, articulating them with public concerns. This implies a capacity of the mediator to be, at the same time, familiar with the environment and detached from it. This double condition is necessary in order to evaluate how differently environmental damage affects persons, threatening goods defined as such in the experience of engagements of proximity as well as in the public space (Richard-Ferroudji, 2008).

Conclusion

The concept of negative externalities is the dominant frame in environmental policies. In this paper I have discussed the neoclassical economic approach to environmental damage, showing, by means of a critical analysis developed within the field of economics, the risks of reductionism implied by such an approach. Considering efficiency as the only desirable collective goal to be pursued, economic theory has no means by which to detect and analyse the presence, in externality situations, of conflicting definitions of what constitutes value. Besides market efficiency, other evaluation criteria to define what is a collective good or bad are relevant in externality situations.

The approach of neoclassical economics prevents us from taking into account the political nature of externality situations. Revisiting externalities by means of a sociological approach, I have shown how the process of externality definition and internalisation can be analysed as a political process in which a public is constituted and common problems are collectively defined and addressed. In particular, I have highlighted the presence in this process of two kinds of uncertainty which have to be dealt with: an epistemic uncertainty and a moral uncertainty.

The epistemic uncertainty raises the question of the relation existing between lay and expert knowledge in defining the legitimate knowledge base for public decision. The moral uncertainty is related to the existence of a plurality of definitions by which something is valued as a good or as a bad. In particular, I have pointed out the relevance of two sources of moral complexity: the existence of different orders of worth, according to which what is good is publicly defined, and the existence, besides these public moral criteria for

evaluation, of more local criteria of judgement, anchored in the experience of proximity to the environment.

The two kinds of uncertainty (epistemic and moral) are strictly intertwined. Still, keeping these two forms of uncertainty analytically separated is useful in order specifically to analyse the different types of translation, mediation and composition (at epistemic and moral levels) which are needed in order to create the conditions for a truly inclusive and democratic public deliberation on environmental damage, its definition, repairing and prevention.

The economic tools designed for dealing with externalities, with their emphasis on commensurability, are deeply inadequate to promote a reduction of epistemic and moral uncertainty which could allow for a truly inclusive composition of plural ways to value the environment. In this sense, the neoclassical approach to externalities can be not only misleading in addressing the problems at stake but it can produce a situation of lack of democracy regarding how environmental problems are defined as collective. Public decision processes concerning environmental issues have to be designed so as to take into account different stances concerning not only the relevant knowledge base for decision-making but also the very definition of what can be considered as an environmental good or bad.

Acknowledgements

I would like to thank for their comments on earlier versions of this paper José Maria Castro Caldas, Luigi Pellizzoni, Audrey Richard-Ferroudji, Laurent Thévenot and Tommaso Vitale and the two anonymous referees. The paper was first conceived during my stay at the GSPM Laboratory (EHESS-CNRS), made possible by a post-doctoral grant awarded by the Municipality of Paris (Bourse Internationale de la Ville de Paris, 2005/2006).

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